

The Software Capability Maturity Model (SW-CMM) & Preparation for SID Quick-Assessments



March 2003



Carnegie Mellon
Software Engineering Institute

Changing The Way You Think About Process Improvement!

Today's Agenda

- Background To The SW-CMM
- Project Assessment Objectives
- How the Assessment Will Work
- Review Assessment Schedule
- The CAIP

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Standish Group - CHAOS Study

In the U.S. in 1995, \$250 billion / year spent on information technology for 175,000 software projects

- 31% of projects canceled before completion
- 53% of projects cost 189% of original estimates
- spend \$81 billion for canceled software projects

Only 16% of software projects completed on-time and on-budget

<http://www.standishgroup.com/chaos.html>

April 2000

Executive Intro to SPI



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Myth: Software Problems Are "Technical" Problems

Examined real-life case studies

- Defense Science Board Task Force on Military Software report, 1987
- "Bugs in the Program" report, 1989
- red teams, assessments, evaluations, ...

Well-known, consistent problems – revealing a major gap between the state-of-the-art and the state-of-the-practice

The major problems in software development are managerial – not technical.

Sept 2001

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History of CMM

Capability Maturity Models: Standards for Organizational Measurement and Improvement

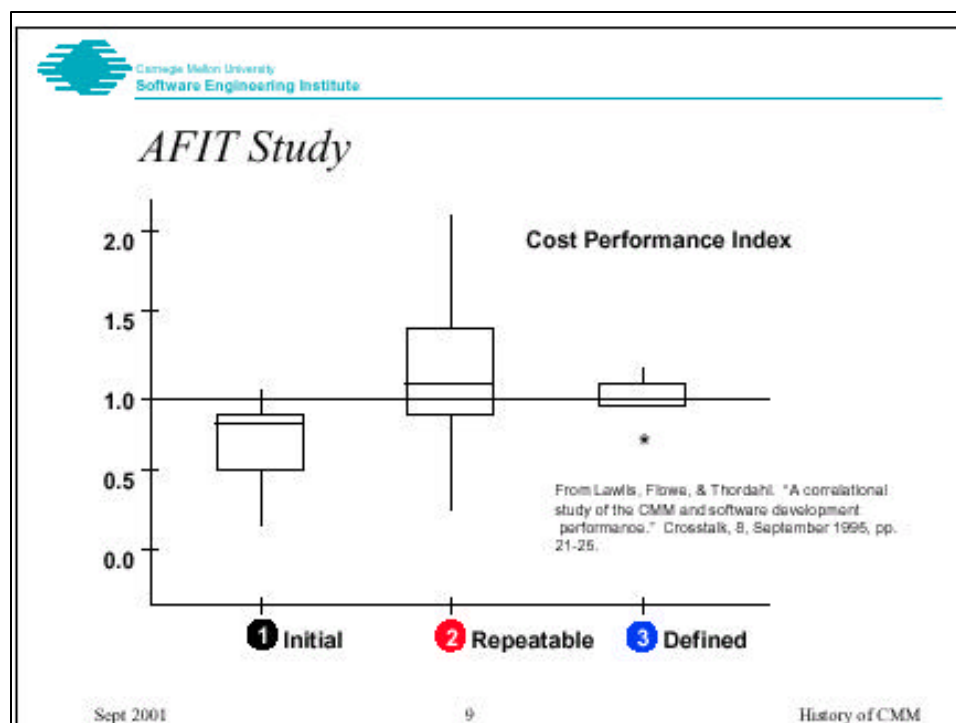
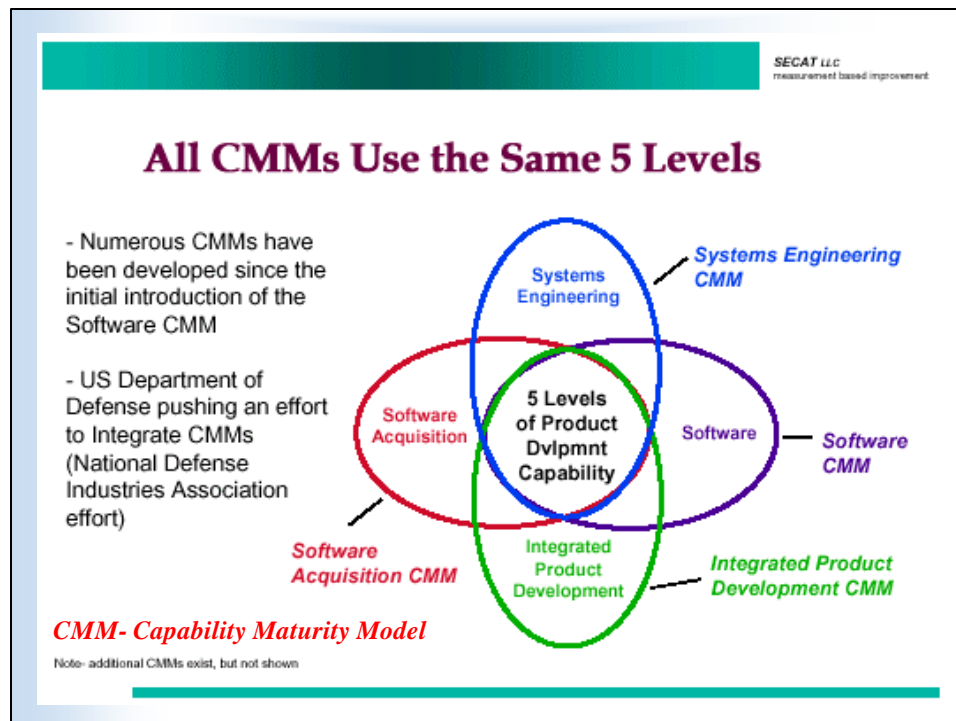
Research performed on how to best transition an organization from chaotic to continuously improved product development

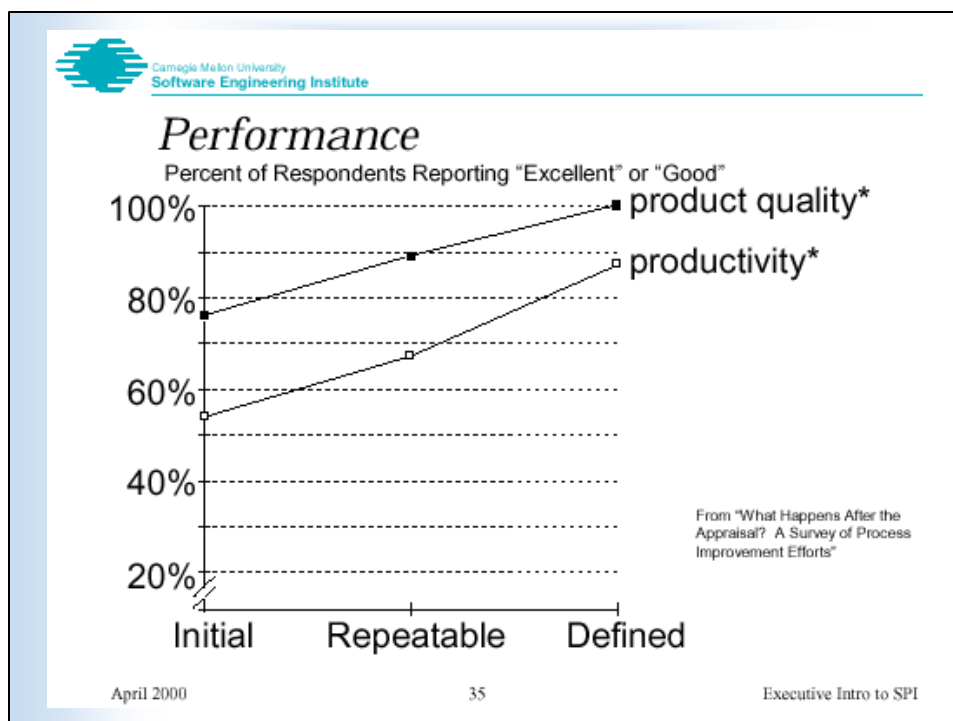
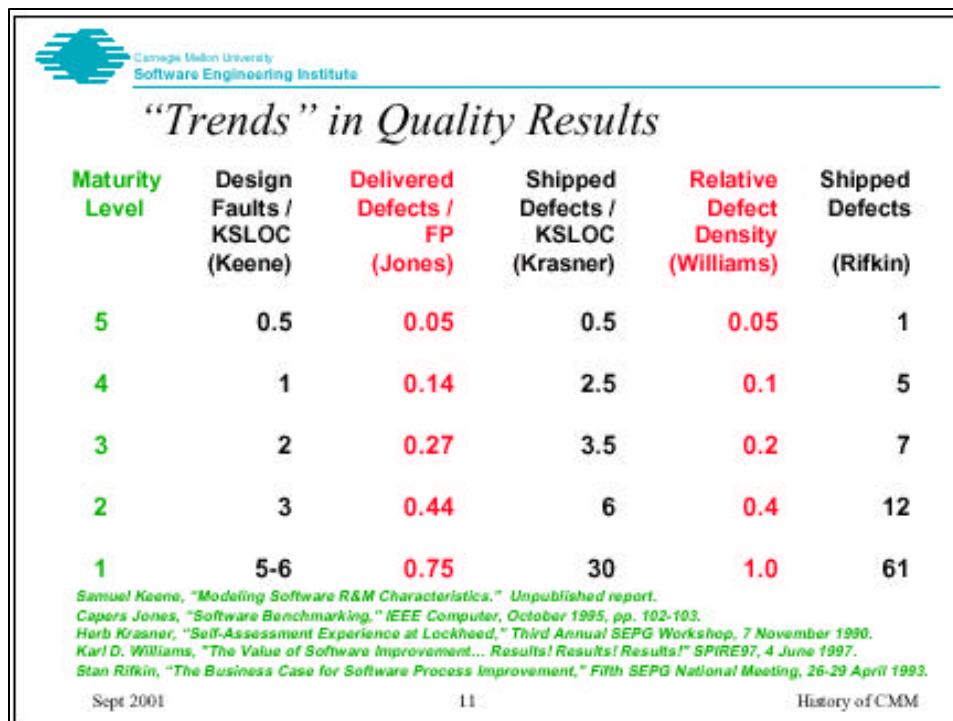
Started with work done by IBM in early 1980's, developed into Capability Maturity Model in mid to late 1980's by Software Engineering Institute (Carnegie Mellon University)

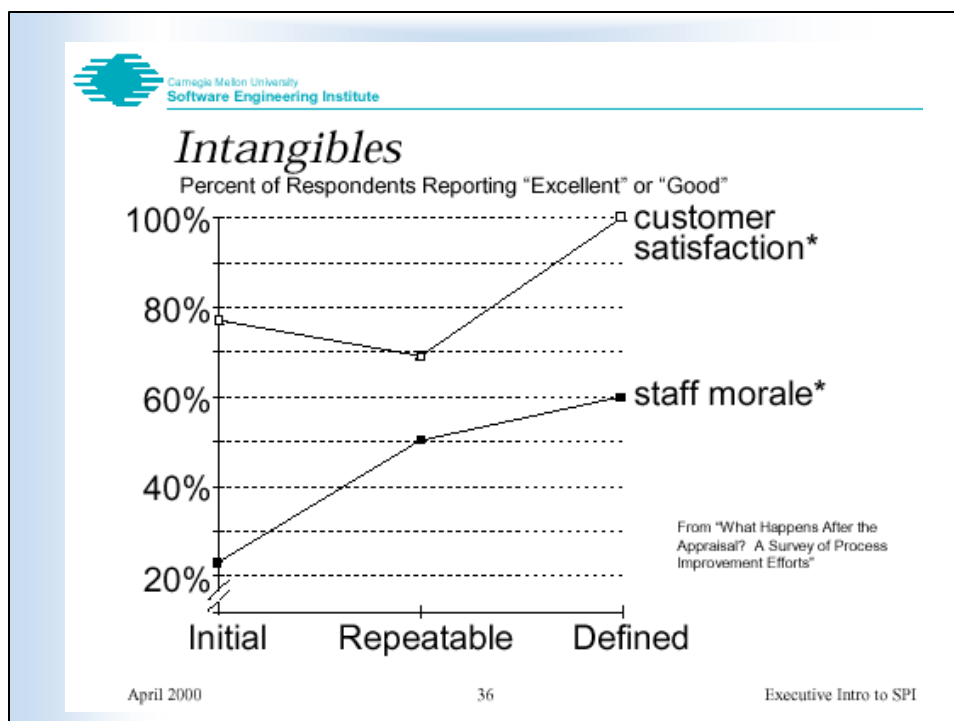
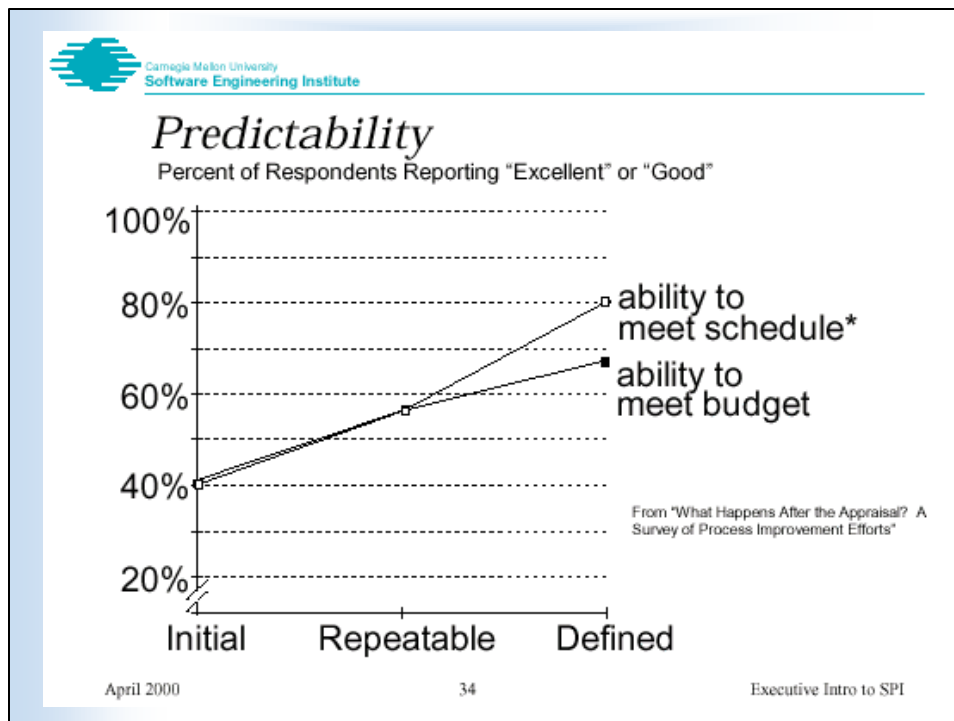
Broke the transition from chaos to continuously improved into a sequence of 5 levels

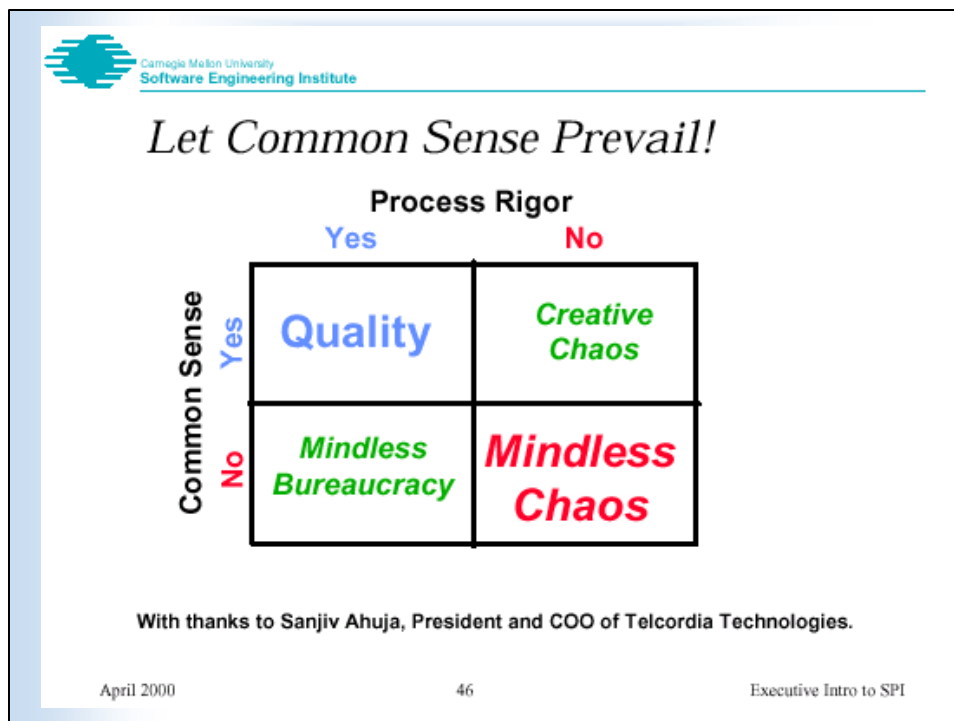
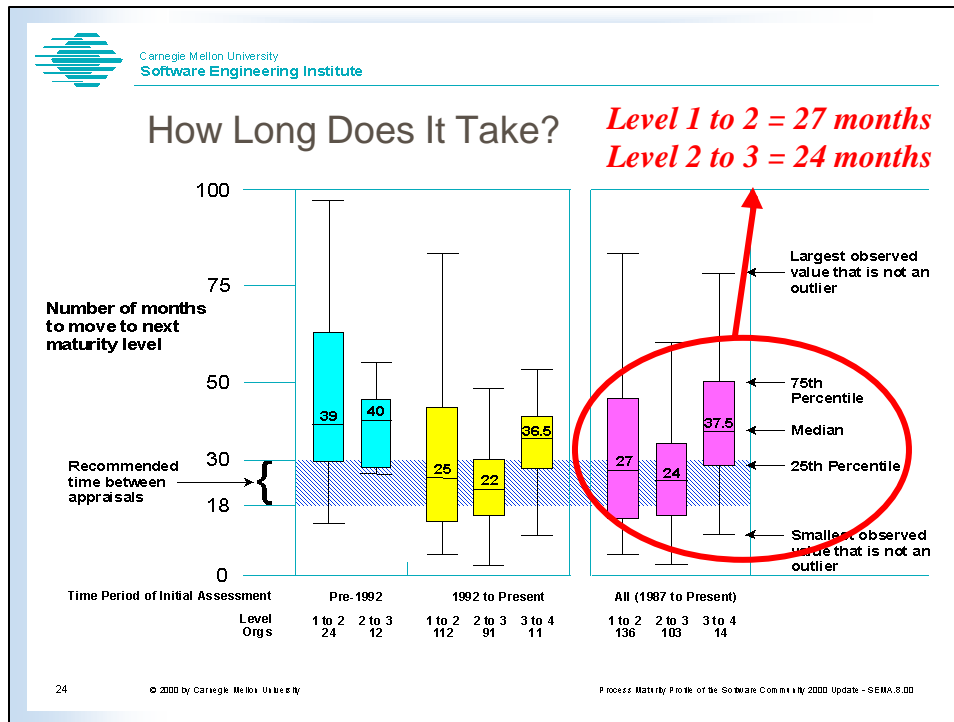
Developed a method for a company to measure itself against the 5 levels


SEIAT LLC
measurement based improvement









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Definition of Software Process

Process – a sequence of steps performed for a given purpose (IEEE)

Software process – a set of activities, methods, practices, and transformations that people use to develop and maintain software and the associated products (SEI)

Procedures and methods defining the relationship of tasks

People with skills, training, and motivation

Tools and equipment

PROCESS

Sept 2001 14 History of CMM

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Project Assessment Objectives

- To understand the context and content of the SW-CMM Level 2 Key Practice Areas (KPAs) and SA-CMM Level 3 KPAs.
- To relate SW-CMM KPAs to your project in a meaningful way.
- To add value to your project (and SID) by affording opportunities to improve business practices.
- To prepare projects for possible CMM certification.

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CMM: Levels of Maturity

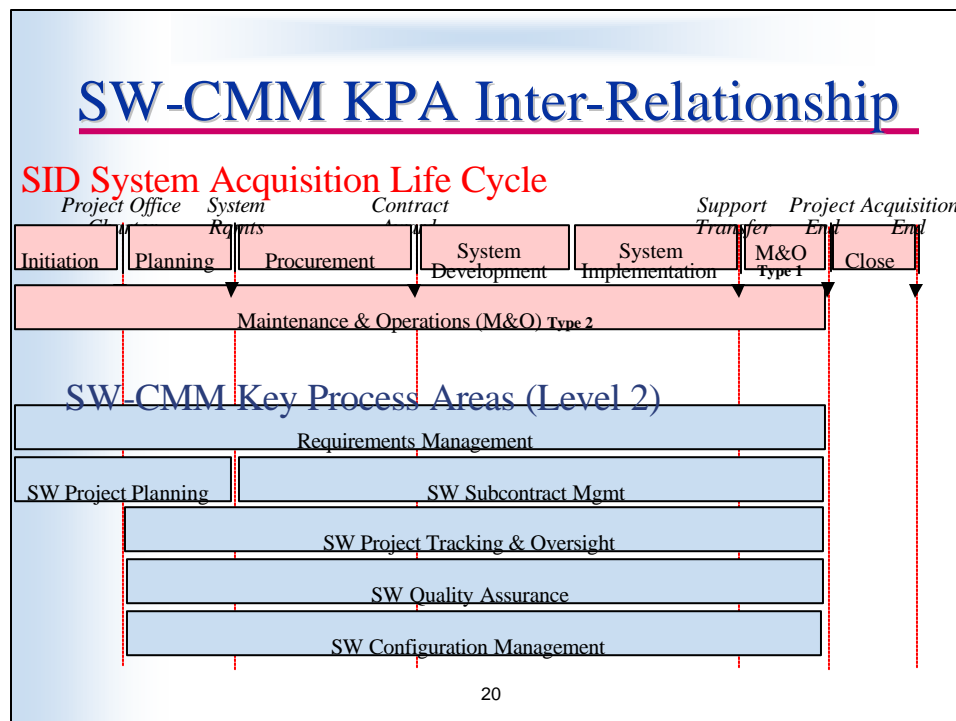


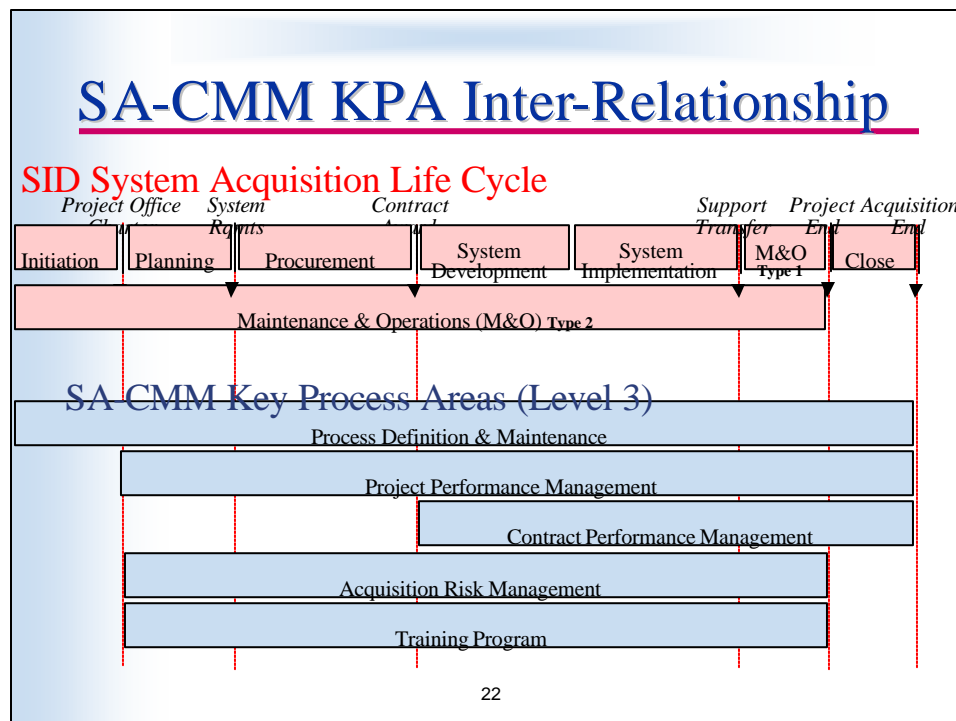
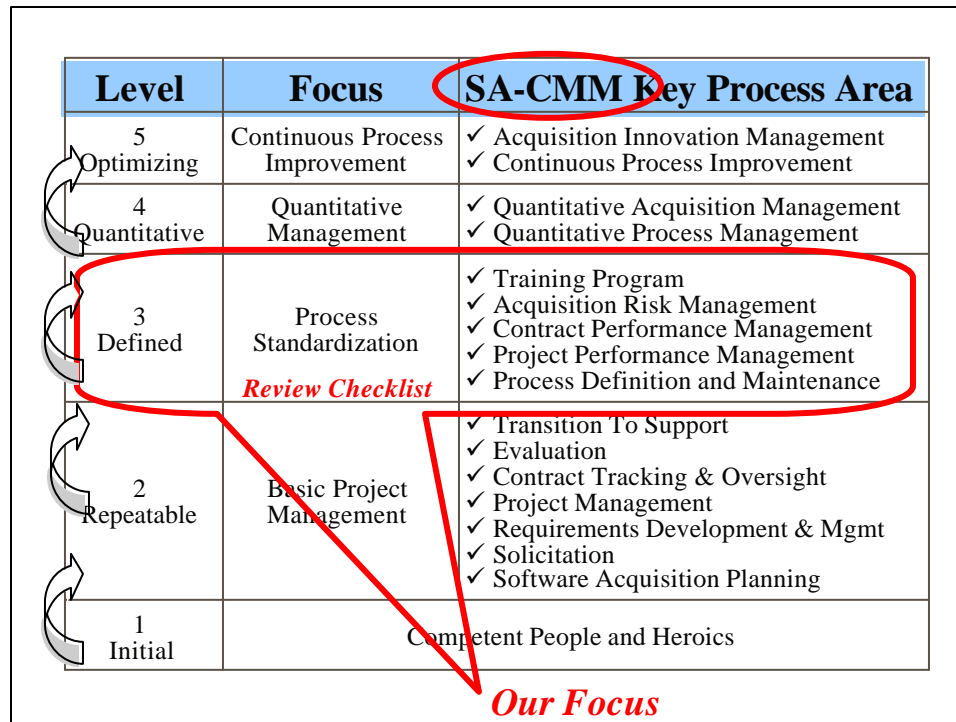
- **Maturity Levels**
- > Level 5: Optimizing
- > Level 4: Managed
- > Level 3: Defined
- > Level 2: Repeatable
- > Level 1: Initial

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Level	Focus	SW-CMM Key Process Area	Results
5 Optimizing	Continuous Process Improvement	<ul style="list-style-type: none"> ✓ Defect Prevention ✓ Technology Change Management ✓ Process Change Management 	<div>Quality</div> <div>Risk</div>
4 Managed	Product and Process Quality	<ul style="list-style-type: none"> ✓ Quantitative Process Management ✓ Software Quality Management 	
3 Defined	Engineering Processes and Organizational Support	<ul style="list-style-type: none"> ✓ Organization Process Focus ✓ Organization Process Definition ✓ Training Program ✓ Integrated Software Management ✓ Software Product Engineering ✓ Intergroup Coordination ✓ Peer Reviews 	
2 Repeatable	Project Management Processes	<ul style="list-style-type: none"> ✓ Requirements Management ✓ Software Project Planning ✓ SW Project Tracking & Oversight ✓ Software Subcontract Management ✓ Software Quality Assurance ✓ Software Configuration Management 	
1 Initial	Competent People and Heroics		

Our Focus





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Project Lifecycle / Rating Scheme

<Insert Your SW Development Life Cycle Here>

Rating	Definition	Explanation	Scoring Value
FS	Fully Satisfied	The project has fully demonstrated the discipline and has tangible artifacts to back up the claim.	1-point times the raw FS score.
PS	Partially Satisfied	The project has demonstrated portions of the discipline and has some tangible evidence to show.	½-point times the raw PS score.
NS	Not Satisfied	The project does not practice this discipline at all.	0-points times the raw NS score.
NR	Not Required	The discipline (while applicable to the project) is not a required practice for the project's current life cycle phase. Thus, the discipline is not to be considered in the scoring process.	Not Applicable
NA	Not Applicable	This practice does not at all apply to the project's business practices and is not to be considered in the scoring process.	Not Applicable

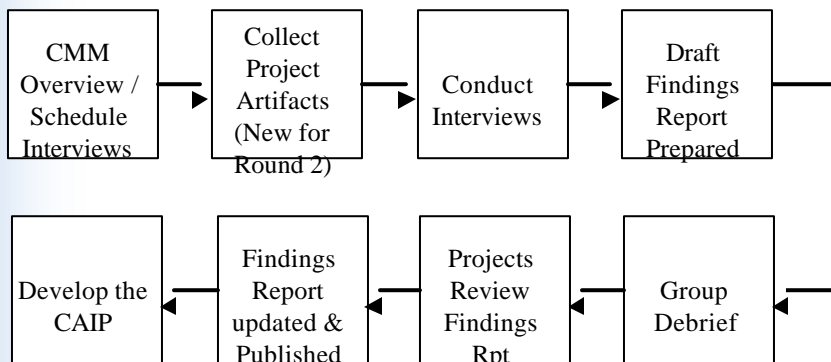
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Time Expectation On The Team!

- **Team Overview Session (1.5 hours)**
- **Preparation for the Interview (1.5 hours per person)**
 - Read the SW-CMM Introduction section.
 - Read your assigned SW-CMM handbook section(s).
 - Translate the checklist inquiry to life on your project. What does it mean for your project?
 - Be comfortable with how the Interview Process will work.
- **The Interview (0.5 - 1 hour for each of the KPAs)**
 - Team discussion w/ Tom, Laura, and the Project Manager.
 - Define what the Artifact is (or should be) that will prove adherence.
 - Determine a rating for each item (FS, PS, NS, NR, NA).
- **Review Findings Report / Team Debrief (1-2 hours)**

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Assessment Process



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Questions?

- **Check out our Website**
 - <http://bpweb> (on the intranet)
 - <http://www.bestpractices.cahwnet.gov>
- **Contact Us**
 - **Laura Okawa**
 - ▶ 263-4120 (mornings); 606-5455 (afternoons)
 - ▶ Lokawa@sid.hhsdc.ca.gov
 - **Tom Arnez**
 - ▶ 263-4293
 - ▶ Tarnetz@sid.hhsdc.ca.gov

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Assessment Interview Schedule

Date/Time	SW-CMM Level 2 Topic	Interviewees
	2.1 Requirements Mgmt	
	2.2 SW Project Planning	
	2.3 Proj Tracking & Oversight	
	2.4 SW Subcontract Mgmt	
	2.5 SW Quality Assurance	
	2.6 SW Configuration Mgmt	

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Assessment Interview Schedule

Date/Time	SA-CMM Level 3 Topic	Interviewees
	3.1 Process Definition & Maintenance	
	3.2 Project Performance Management	
	3.3 Contract Performance Management	
	3.4 Acquisition Risk Management	
	3.5 Training Program	

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CMM Assessment Implementation Plan (CAIP)

- **Starting December 2002, Round 2 assessments included the creation of a CMM Assessment Implementation Plan (called CAIP).**
- **A CAIP takes the findings from the CMM Assessment and translates it into a realistic plan for implementing recommendations to include proposed completion dates, resource requirements, and progress reporting mechanisms.**

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Looking Ahead to Round 3

- The series of Round 3 assessments are anticipated to be the final so-called “practice” assessment before the organization seeks a formal SEI assessment.
- These assessments will attempt to replicate an actual SEI assessment. Most notable will be the inclusion of project practitioners in the interview pool (previously only project leads and managers).
- Also, greater vigilance will be used to evaluate the adherence to formalized processes and documentation evidence to corroborate interview responses.
- An independent contractor will likely be utilized to ensure independence and unbiased tendencies during this final practice³³ assessment.